

## Welding Procedure Specification

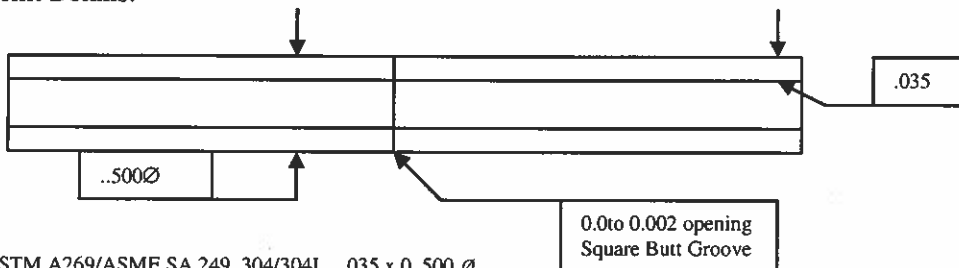
<b>Welding Procedure Specification No.:</b> WPS AMI/Orbital 002			<b>Date:</b> 12/29/2009**
<b>Revision No.:</b>	<b>Revision Date:</b>	<b>Remarks:</b>	<b>Supporting PQR No.(s):</b>
<b>Welding Processes:</b> GTAW/Automatic	(2)	PQR AMI/Orbital 002	
(Manual, Automatic, Machine, Semi-automatic)			

### Joints (QW-402):

**Joint Design:** Square Butt Groove **Backing:** Gas **Backing Material (Type):** Argon Gas **Remainder:**

**Retainer:** Yes \*\*\* No **Type:** Non-Metallic \*\*\* Metallic (Non-fusing)

### Joint Details:



ASTM A269/ASME SA 249 304/304L .035 x 0.500 Ø

AMI Orbital Welding Machine (Autogenous only)

### Base Metals (QW403):

P-No.: 8 Group 1

TO

P-No.: 8 Group 1

Specification Type and Grade: SA 249 Type 304/304L

TO Specification Type and Grade: SA 249 Type 304/304L

OR Chemical Analysis and Mechanical Properties:

TO Chemical Analysis and Mechanical properties:

### Thickness Range:

#### Process 1

#### Process 2

### Base Metal:

Groove: .035

Fillet: Unlimited

Groove:

Fillet:

### Deposited Weld Metal:

Groove: .035

Fillet: Unlimited

Groove:

Fillet:

### Pipe Diameter Range:

Groove: .250 Minimum

Fillet: Unlimited

Groove:

Fillet:

### Other:

### Filler Metals (QW-404)

#### Process 1

#### Process 2

Specification No. (SFA):

Autogenous - No Filler

AWS No. (Class):

F-No.:

A No.:

8

Size of Filler Metals:

Deposited Weld Metal

Thickness Range:

Groove:

Fillet: Unlimited

Groove:

Fillet:

Electrode-Flux (Class):

Flux Trade Name:

Consumable Insert:

Other:

Each Base Metal-Filler Metal Combination should be recorded individually.

## Welding Procedure Specification

BACK AMI/Orbital WPS-002

Positions (QW-405)		Post Heat Treatment (QW-407)	
Positions of Groove:	All	Temperature Range:	None
Welding Progression	Upward & downward	Time Range	N/A
Positions of Fillet	All		

Preheat (QW-408)		Gas (QW-408)		
Preheat Temperature:	Minimum 50 °F		% Composition	
Interpass Temperature:	Maximum-Not Recorded	Gases	Mixture	Flow Rate
Preheat Maintenance:	None	Shielding	Argon	99.9%
Minimum Welding Temperature	32 °F	Trailing	None	***
		Backing	Argon	99.9%

Electrical Characteristics (QW-409)				
Current – AC or DC:	Direct Current	Polarity: Straight	Characteristics	Pulsing
Tungsten Electrode:	Size: .040Ø	EWCe-2	.040" Ø Tungsten w/.020" tip Ø, & .030" Arc Gap	
Mode of Metal Transfer for GMAW:	N/A			
Electrode Wire Feed Speed Range:	N/A			

Technique (QW-410)	
String or Weave Bead:	String
Orifice or Gas Cup Size:	AMI Orbital Head 9-500
Initial Interpass Cleaning (Brushing, Grinding, etc.):	Initial Solvent Clean***Do not brush finish weld.
Method of Back Gouging:	None
Oscillation:	None
Contact Tube to Work Distance:	N/A
Multiple or Single Pass (per side):	Single
Multiple or Single Electrode(s):	Single
Travel Speed (Range):	"See sequence Chart"
Peening:	None
Other: Use manufacturer supplied pre-shaped & pre-sized EWCE-2 Tungsten	

Sequence Chart : AMI Orbital Model 227 STD2.1 with Model 9-500 Weld Head .035" x .500" Ø SA 249 (ASTM A 269)									
Weld Levels	Pulse	Rotation	RPM		Time	AMPS		PULSE	
			Primary	Back		Primary	Back	Primary	Back
1	ON	Continuous	1.00	--	110	30	5	.20	.20

Manual GTAW Tacking of assembly optional by qualified welder.  
Use pre-shaped and pre-sized factory supplied tungsten